Appl. No. 09/827,440

In the Claims:

Listing of all claims:

1-24. Cancelled.

25. (Previously Added) A welding, cutting or heating power source, comprising:

an input rectifier configured to receive an ac input and to provide a first dc signal;

a converter configured to receive the first dc signal and to provide a converter output, and configured to receive at least one control input;

an output circuit configured to receive the converter output and to provide a welding, heating or cutting signal; and

a controller, including a power factor correction circuit, configured to provide at least one control signal to the converter.

26. (Previously Added) The apparatus of claim 25, further including an auxiliary power source capable of providing a control power signal at a preselected control signal voltage, regardless of the magnitude of the ac input signal.

27. (Previously Added) The apparatus of claim 26, wherein the auxiliary power source includes an auxiliary transformer with a plurality of primary taps.

28. (Previously Added) The apparatus of claim 25, wherein the converter includes a boost circuit.

29. (Previously Added) The apparatus of claim 25, wherein the output circuit includes a pulse width modulator.

30. (Previously Added) The apparatus of claim 29, wherein the converter includes a boost circuit.

31. (Previously Added) The apparatus of claim 25, wherein the output circuit includes an inverter.

32. (Previously Added) The apparatus of claim 25 wherein the output circuit includes a rectifier.

33. (Previously Added) The apparatus of claim 25 wherein the output circuit includes a cycloconverter.

34. (Previously Amended) A method of providing a welding, cutting or heating current, comprising:

boost converting and power factor correcting an ac input signal to a second ac signal; and

changing the second ac signal into a third signal having a current suitable for welding, cutting or heating.

35. Cancelled.

36. (Previously Amended) The method of claim 34 further including providing control signals to a converter.

37. (Previously Added) The method of claim 34, further including providing auxiliary power signal by transforming the ac input signal.

38. (Previously Added) The method of claim 34, wherein changing includes pulse width modulating.

39. (Previously Added) The method of claim 34, wherein changing includes inverting.

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40. (Previously Added) A welding, cutting or heating power source, comprising:

rectifier means for receiving an ac input providing a first dc signal;

converter means for receiving the first dc signal and providing a converter output;

control means for controlling the converter means, wherein the control means includes a power factor correction means for power factor correction, connected to the converter means;

output means for receiving the converter output and providing a welding, heating or cutting signal.

41. (Previously Added) The apparatus of claim 40, wherein the converter means includes a boost circuit.

42. (Previously Added) The apparatus of claim 41, wherein the output means includes a pulse width modulator.

43. (Previously Added) The apparatus of claim 40, wherein the output circuit includes an inverter.

44. (Previously Added) The apparatus of claim 40 wherein the output circuit includes a rectifier.

45. (Cancelled.)

46. (New) A welding or cutting power source, comprising:

an input rectifier configured to receive an ac input having a magnitude over a range of inputs, wherein the range

includes a highest magnitude at least twice a lowest magnitude, and to provide a first dc signal;

a boost converter, including a boost inductor connected to receive the first dc signal, wherein the boost converter has a dc bus output;

an output circuit configured to receive the dc bus output and to provide a welding or cutting signal; and

a controller, including a power factor correction circuit, configured to provide at least one control signal to the boost converter.

47. (New) The apparatus of claim 46, further including an auxiliary power source capable of providing a control power signal at a preselected control signal voltage for a plurality of magnitudes of the ac input signal.

48. (New) The apparatus of claim 47, wherein the auxiliary power source includes an auxiliary transformer with a plurality of primary taps.

49. (New) The apparatus of claim 46, wherein the output circuit includes a switched circuit connected across the dc bus, and a transformer having a primary connected in the switched circuit.

50. (New) The apparatus of claim 49, wherein the switched circuit is a pulse width modulator.

51. (New) The apparatus of claim 49, wherein the output circuit includes an output rectifier connected to a secondary of the transformer.

52. (New) The apparatus of claim 51, wherein the switched circuit includes an inverter.

53. (New) The apparatus of claim 51 wherein the output circuit includes an inductor connected to the output rectifier.

54. (New) The apparatus of claim 46 wherein the output circuit includes a cycloconverter.

55. (New) The apparatus of claim 54, further comprising a first output stud connected to the inductor, and disposed to be connected to one of a torch and a ground clamp, and a second output stud, disposed to be connected to the other of the torch and a ground clamp.

56. (New) A welding, cutting or heating power source capable of receiving a range of input voltages, comprising:

an input rectifier configured to receive an ac input, wherein the range includes a highest magnitude and a lowest magnitude, and wherein the highest magnitude is at least twice the lowest magnitude, and wherein the rectifier is configured to provide a first dc signal;

a boost converter connected to receive the first dc signal and provide a second dc output across positive bus and a negative bus, wherein the boost converter is configured to receive at least one control input, and wherein the boost converter includes a boost inductor having a first end in electrical communication with the rectifier, and the boost inductor has a second end in electrical communication with a switch, wherein when the switch is closed the second end is in electrical communication with

negative bus, and wherein the second end is in electrical communication with a diode, and the diode is further in electrical communication with the positive bus, such that current can flow from the second end through the diode to the positive bus;

a switched circuit, connected to receive the dc bus;

an output transformer, having a primary connected to receive a second ac signal from the switched circuit and to provide a third ac signal having a current suitable for welding or cutting on a secondary;

an output rectifier connected to the secondary, that provides a third dc signal;

a controller, including a power factor correction circuit, configured to provide at least one control signal to the converter; and

an auxiliary power source capable of providing a control power signal at a preselected control signal voltage, for a plurality of input voltages.

57. (New) The apparatus of claim 56, further including an auxiliary transformer with a plurality of primary taps, wherein the auxiliary power controller is in electrical communication with the plurality of primary taps.

58. (New) The apparatus of claim 57, wherein the switched circuit includes a pulse width modulator.

59. (New) The apparatus of claim 58, wherein the range of input voltages is 230 volts to 575 volts.

60. (New) The apparatus of claim 58 wherein the output circuit includes an output inductor that receives rectifier.

61. (New) The apparatus of claim 60, wherein the dc output is provided across a first stud and a second stud, wherein the first stud is disposed to be connected to one of a torch and a ground clamp, and the second output stud is disposed to be connected to the other of the torch and a ground clamp.